WM-AF61/BF56/BF60

SERVICE MANUAL

US Model
Canadian Model
WM-AF61
E Model
WM-BF56
AEP Model
UK Model
WM-BF60

Photo: WM-AF61

Photo: WM-BF56

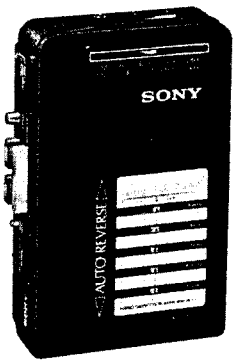


Photo: WM-BF60

SPECIFICATIONS

Model Name Using Similar Mechanism	WM-F69
Tape Transport Mechanism Type	MF-WMF39-80

Radio section
Frequency range
In Italy:
FM: 87.5–108MHz
AM: 526.5–1,606.5kHz
In the other countries:
FM: 87.6–108MHz
AM: 530–1,605kHz

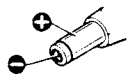
Tape player section and general
Frequency response (DOLBY NR OFF)
40–15,000Hz
Power output
WM-AF61, WM-BF60: 10mW+10mW load impedance 16Ω at DC operation
WM-BF56: 5mW+5mW load impedance 16Ω at DC operation
Power requirements
3V DC
Two R6 (size AA) batteries
Sony rechargeable battery
DC IN 3V jack accepts:
Sony AC-D2L AC power adaptor
available in Canada for use on 120V AC, 60Hz
available in other countries for use on 120V AC, 60Hz or 220V AC, 50Hz

Battery life
Approx. 7 hours for tape playback and approx. 30 hours for FM reception using Sony alkaline batteries AM3 (N)
Dimensions
WM-BF60, WM-BF56 and WM-AF61: Approx. 93.1x133.3x39.9mm (w/h/d) incl. projecting parts and controls
Weight
WM-BF60, WM-BF56 and WM-AF61: Approx. 275g incl. batteries
Accessories supplied
Belt clip (1)
WM-BF60 and WM-AF61: Stereo headphones (open-air type, 1)
WM-BF56: Stereo earphones (open-air type, 1) Ear adaptors (2)
For only WM-AF61: Battery charger (1) Rechargeable battery (1)

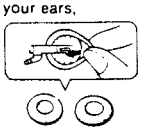
Optional Accessories
AC power adaptor AC-D2L
Battery case EBP-500B
Car battery cord DCC-70
Battery charger BC-700
Rechargeable battery BP-700
(for Canada and E model)

Note: Use only the recommended AC power adaptor or car battery cord manufactured by Sony. Polarity of the plug of other manufacturers may be different.

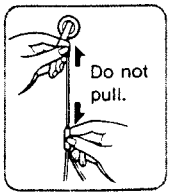
Polarity of the Sony plug



If the earphones do not fit your ears, attach the ear adaptors.



Note on stereo earphones
Put the cord behind your neck.



The knot cannot be moved.

This service manual covers WM-BF60, WM-BF56 and WM-AF61.

	DOLBY NR system*	DBB** function	Graphic equalizer controls	FM sensitivity	Stereo Earphones or headphones	Battery charger	Rechargeable battery
WM-BF60	provided	Provided	Not provided	DX/LOCAL	Stereo headphones	Optional	Optional
WM-BF56	Provided	Not provided	Provided	ST/MONO	Stereo earphones Ear adaptors	Optional	Optional
WM-AF61	Provided	Provided	Not provided	DX/LOCAL	Stereo headphones	Supplied	Supplied

*Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"Dolby" and the double-D symbol ⧈ are trademarks of Dolby Laboratories Licensing Corporation.
**DBB (Dynamic Bass Boost) function is for powerful Mega Bass sound.

MICROFILM

RADIO CASSETTE PLAYER

SONY®

SERVICING NOTE

Flexible Circuit Board Repairing

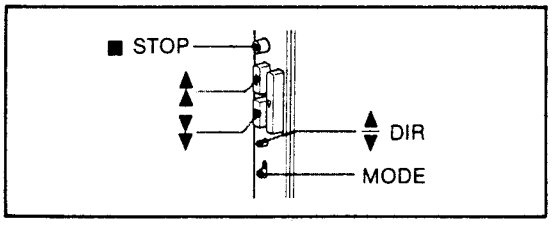
- Keep the temperature of the soldering iron around 270°C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

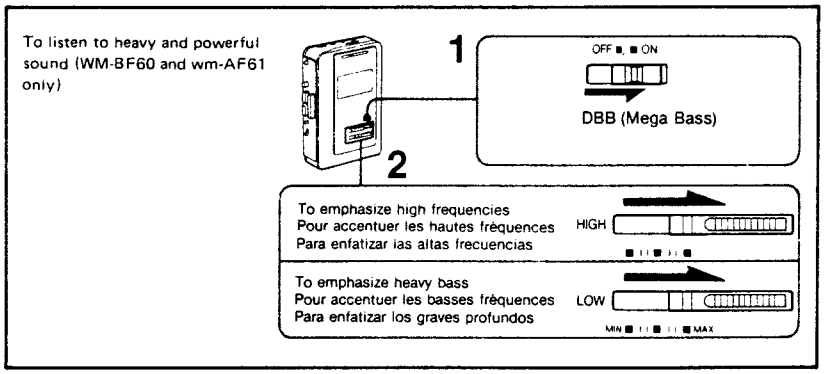
Notes on chip component replacement

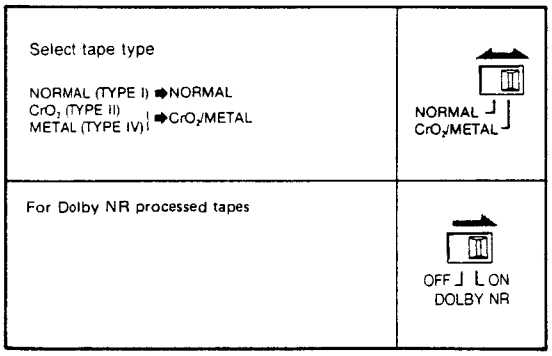
- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

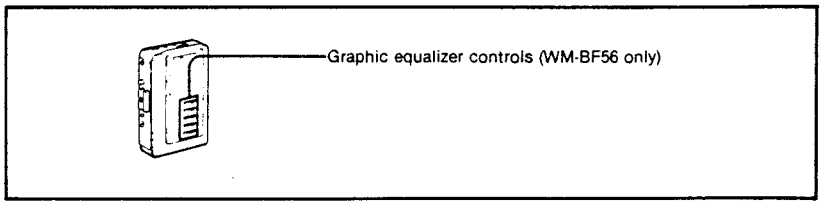
SECTION 1
GENERAL

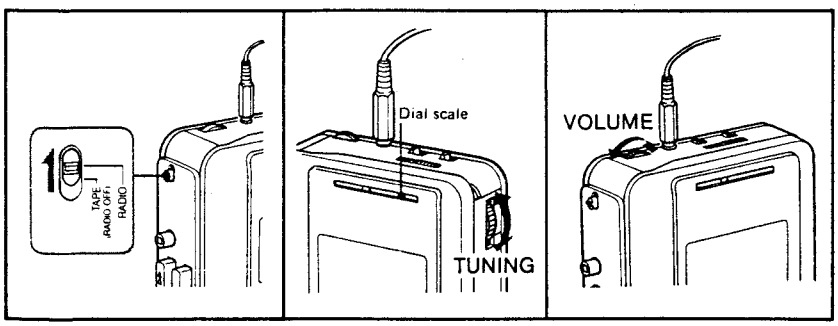
FUNCTION OF CONTROLS

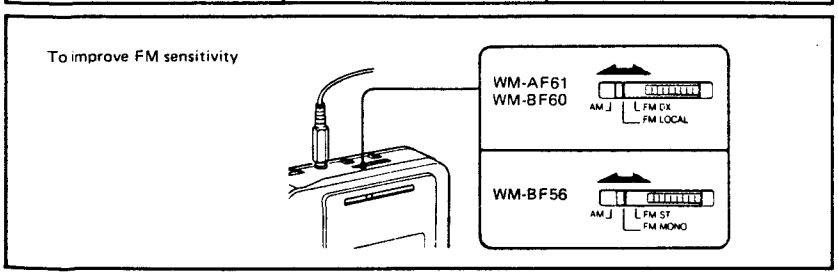












To improve FM sensitivity
Use the band selector.

for WM-AF61 WM-BF60	For FM reception, normally set to DX. If a very strong station signal causes noise, set to LOCAL. The noise will be reduced.
for WM-BF56	For FM reception, normally set to FM ST. When it is hard to hear the broadcast due to noise, set to MONO. The reception will be more stable and noise will be reduced. In this mode, there is no stereo effect.

To improve receiving condition

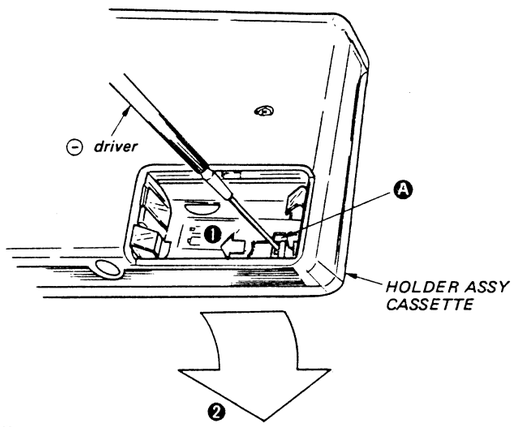
FM	Since the headphone cord serves as an FM antenna, extend it for better reception.
AM	Since the reception is affected by the direction of the unit, rotate the unit horizontally for optimum reception.

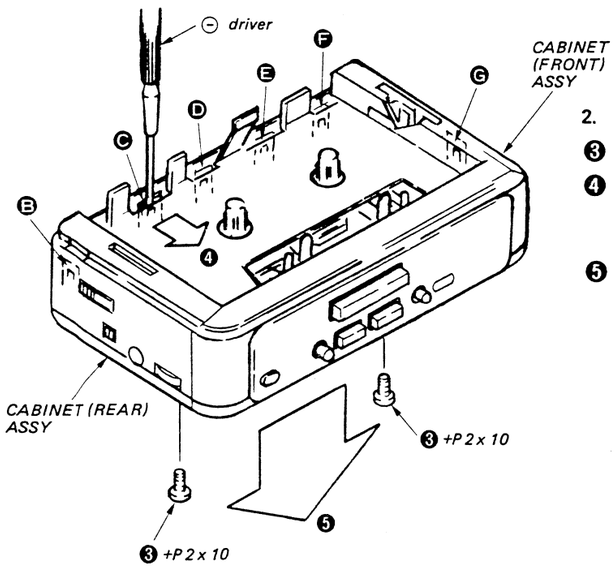
SECTION 2
DISASSEMBLY

1. CASSETTE HOLDER ASSY REMOVAL

❶ Insert a precision driver (–) into the portion Ⓐ inside the battery chamber.

❷ Move the latch in the direction of the arrow ❶ to release it, then pull CASSETTE HOLDER ASSY in the direction of the arrow.





2. CABINET (REAR) ASSY REMOVAL

❸ Remove +P2 x 10 (2 pcs.)

❹ Move claws Ⓑ to Ⓖ with a driver (–) inward of the body to release them.
(at Ⓒ portion move the claw like the arrow ❹)

❺ Remove CABINET (REAR) ASSY in the direction of the arrow.

3. AU AND TU BOARDS, MECHA DECK REMOVAL

❻ (AU BOARD) Move the connector housing W301 in the direction of the arrow.

❼ Pull out the flexible board from PB HEAD.

❽ Release the claws.

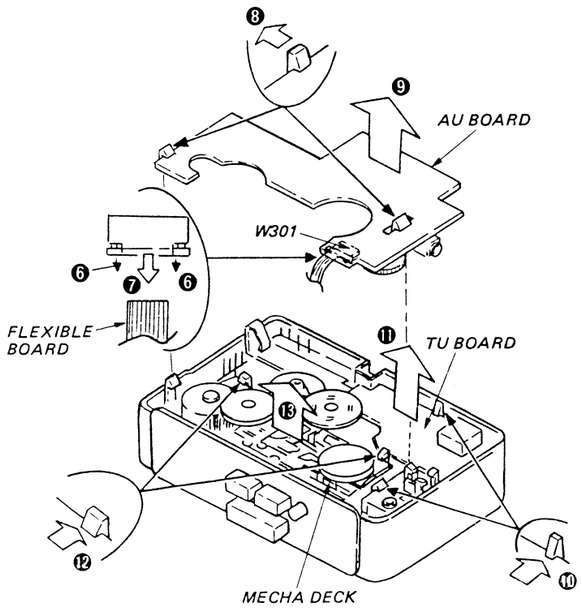
❾ Remove AU BOARD.

❿ (TU BOARD) Release the claws.

⓫ Lift TU BOARD up.

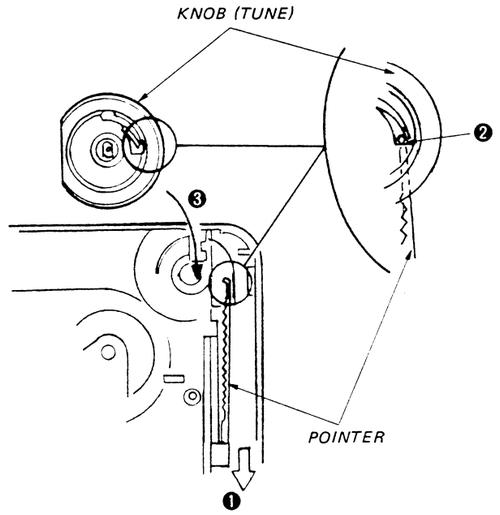
⓬ (MECHA DECK) Release the claws.

⓭ Lift MECHA DECK up.



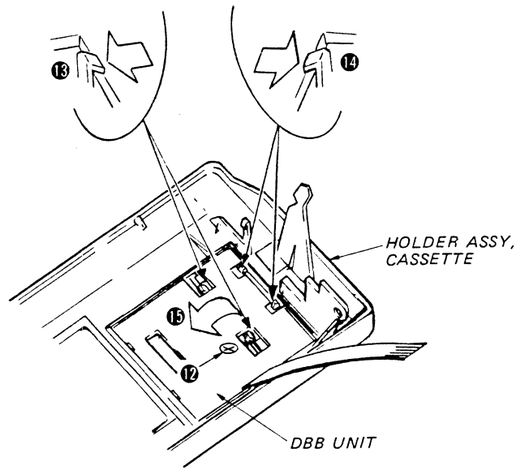
4. DIAL POINTER Setting

- Move the pointer fully in the direction of the arrow ❶ (f min).
- Set the end of the pointer at the portion ❷ of KNOB (TUNE).
- Install the knob in the portion ❸ .
- Confirm the pointer to move smoothly with turning KNOB (TUNE) from f min to f max.



5. DBB (GEQ) UNIT REMOVAL

- ⓬ Remove 1.7 x 2.5 Tapping.
- ⓭ , ⓮ Release the claws.
- ⓯ Lift DBB UNIT up.



SECTION 3
MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured alcohol moistened swab:
   playback head — pinch roller
   capstan — rubber belts
2. Demagnetize the playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage (2.5V) unless otherwise noted.

Torque Measurement

Mode	Torque meter	Meter reading
FWD	CQ-102C	22 – 55 g·cm (0.30 – 0.76 oz·inch)
FWD Back Tension		less than 3 g·cm (less than 0.04 oz·inch)
REV	CQ-102RB	22 – 55 g·cm (0.30 – 0.76 oz·inch)
REV Back Tension		less than 3 g·cm (less than 0.04 oz·inch)
FF, REW	CQ-201B	more than 60 g·cm (more than 0.83 oz·inch)

Tape Tension Measurement

Mode	Torque meter	Meter reading
FWD	CQ-403A	more than 55 g·cm (more than 0.76 oz·inch)
REV	CQ-403R	

SECTION 4
ELECTRICAL ADJUSTMENTS

CASSETTE SECTION

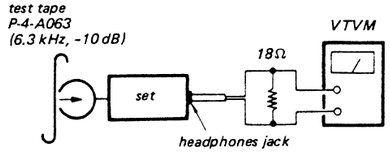
Playback Head Azimuth Check

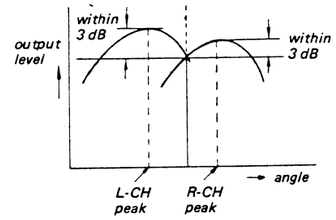
- **Perform this check both in FWD and REV mode.**

Note: This set is not featured the head azimuth adjustment.
When replacing the head, check the both L-ch and R-ch output levels and also those phases.

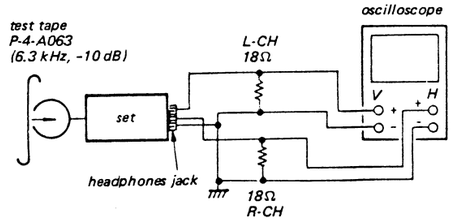
Procedure:

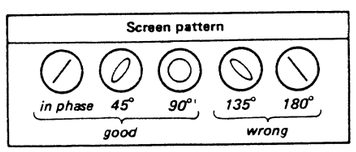
1. Level Check
Mode: playback





2. Phase Check
Mode: playback

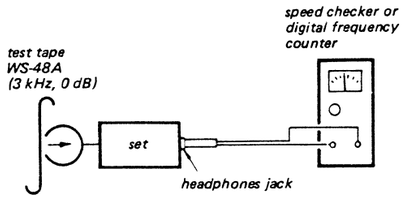




Tape Speed Adjustment

Procedure:

Mode: playback

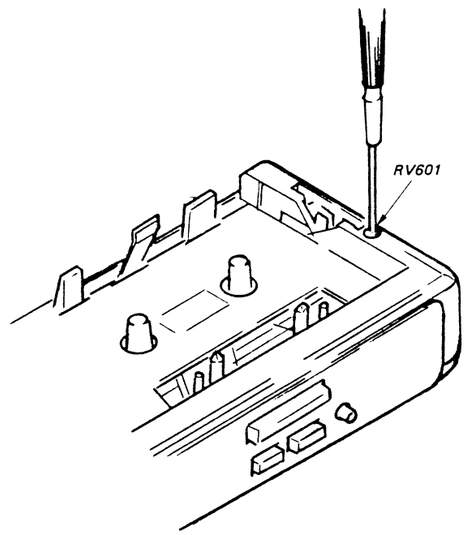


Specification:

speed checker	digital frequency counter
±1%	2,970 – 3,030 Hz

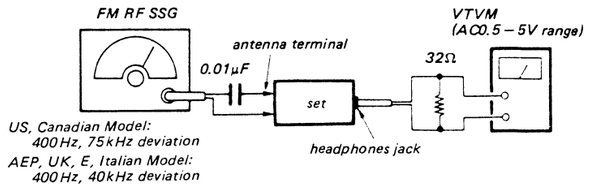
Frequency difference between the beginning and the end of the tape should be within ±2.5% (±75 Hz).

Adjustment Location:



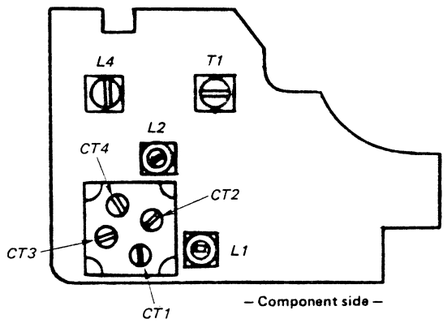
RADIO SECTION

- **FM SECTION**



- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

ADJUSTMNET LOCATION: TU BOARD



FM Frequency Coverage Adjustment

Pointer position	SG frequency	Adjustment part	Reading on VTVM
f minimum	86 MHz (87.35 MHz)	L2	maximum
f maximum	109.5 MHz (108.25 MHz)	CT2	

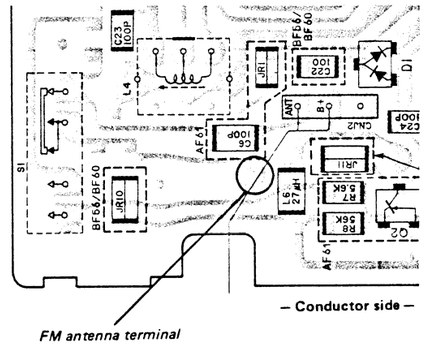
( ): BF60 Italian

FM Tracking Adjustment

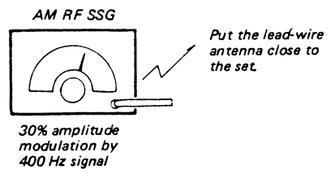
SG and set frequency	Adjustment part	Reading on VTVM
86 MHz (87.35 MHz)	L1	maximum
109.5 MHz (108.25 MHz)	CT1	

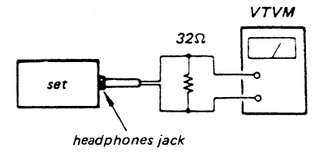
( ): BF60 Italian

Note:
For adjustment of WM-BF56, set BAND SW at STEREO.



- **AM SECTION**





- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

AM Frequency Coverage Adjustment

Pointer position	SG frequency	Adjustment part	Reading on VTVM
f minimum	505 kHz (516.3 kHz)	L4	maximum
f maximum	1,680 kHz (1,606.5 kHz)	CT4	

( ): BF60 Italian

AM IF Alignment

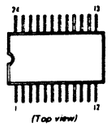
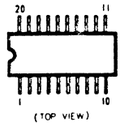
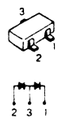
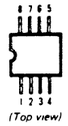
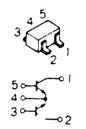
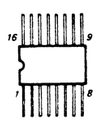
SG frequency	Adjustment part	Reading on VTVM
450 kHz	T1	maximum

AM Tracking Adjustment

SG and set frequency	Adjustment part	Reading on VTVM
600 kHz	L3	maximum
1,400 kHz	CT3	

SECTION 5
DIAGRAMS

5-1. Semiconductor Lead Layouts

TA8122AF	**LA4580M**	**1SS123**	**AN6612S**
			
XN1215	**2SA812**	**2SC1623 2SB1132Q**	**NJM2063AM**
			

● Semiconductor Location

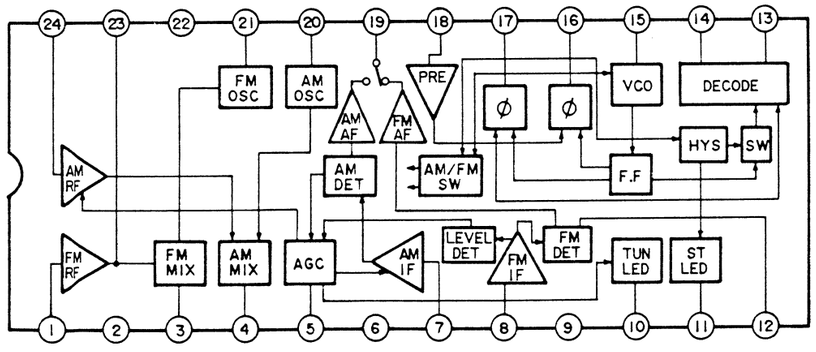
Ref. No.	Location
D1	D-3
IC1	E-4
IC301	D-17
IC302	D-12
IC601	D-8
Q1	F-5
Q2(AF61)	D-2
Q301	D-9
Q601	D-9

Note:

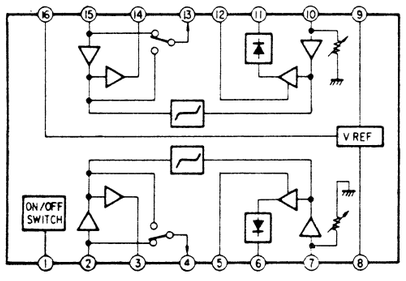
- ○—— : parts extracted from the component side.
- ●—— : parts extracted from the conductor side.
- ■ : parts mounted on the conductor side.
- ⬚ : indicates side identified with part number.
- ⊗ : Through hole.
- ▨ : Pattern on the side which is seen.
- ▨ : Pattern of the rear side.

IC BLOCK DIAGRAMS

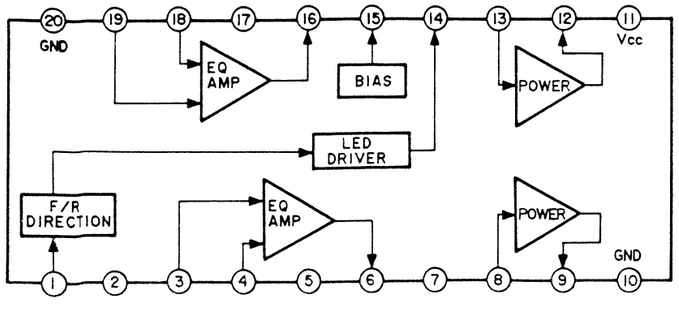
TA8122AF



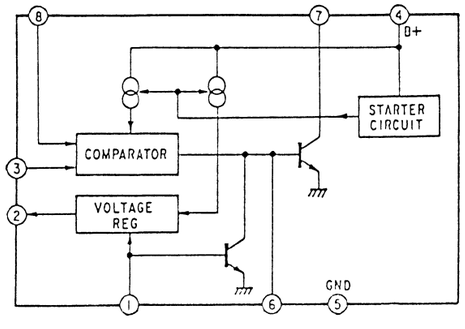
NJM-2063AM



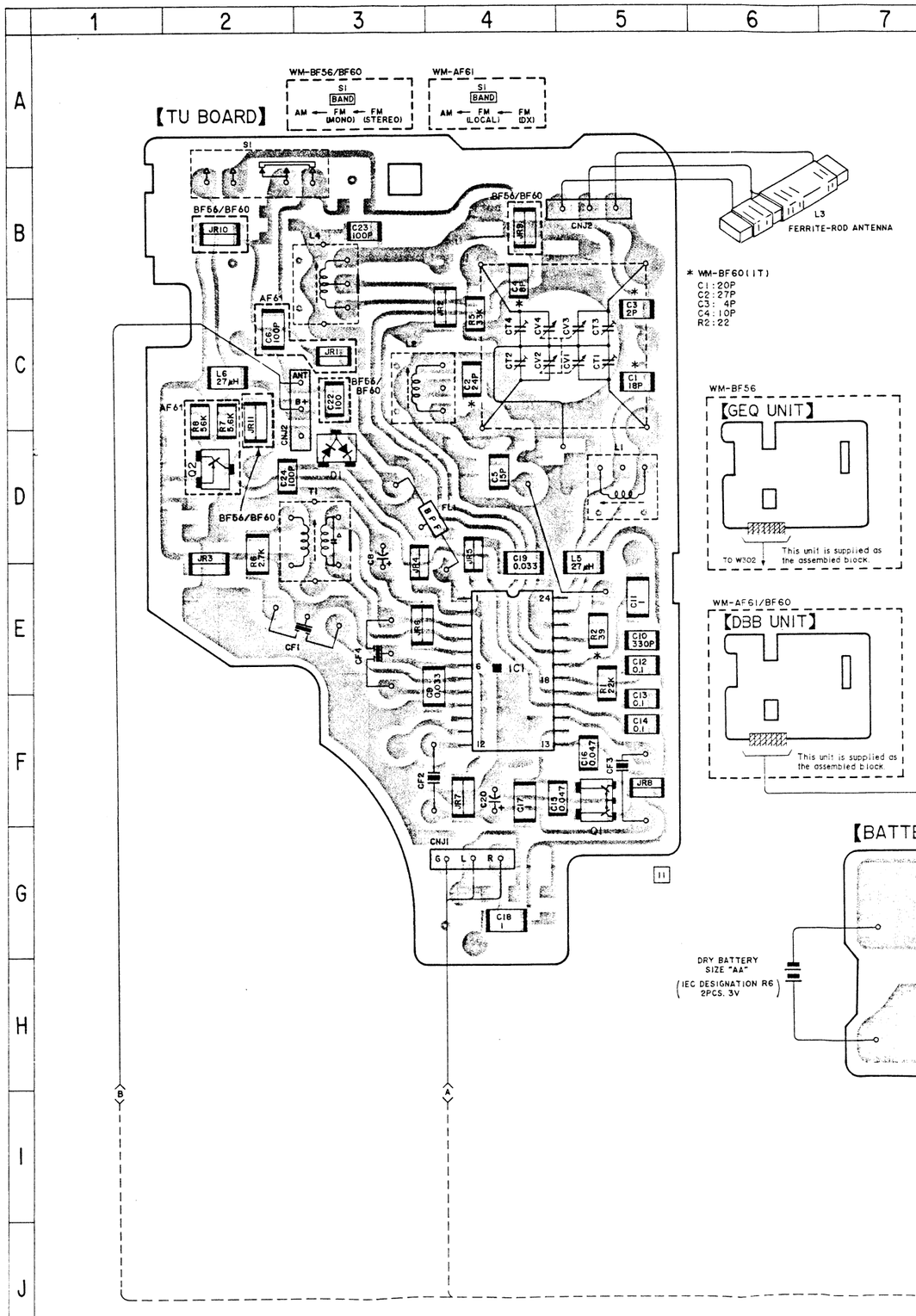
LA4580M



AN6612S



5-2. PRINTED WIRING BOARDS



5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

L3
FERRITE-ROD ANTENNA

* WM-BF60(IT)
C1:20P
C2:27P
C3: 4P
C4:10P
R2:22

WM-BF56
【GEQ UNIT】
This unit is supplied as the assembled block
TO W302

WM-AF61/BF60
【DBB UNIT】
This unit is supplied as the assembled block

【AU BOARD】

RED
BLK
M901
MOTOR

【BATTERY TERMINAL BOARD】
DRY BATTERY
SIZE "AA"
(IEC DESIGNATION R6)
2PCS. 3V
BLU
RED

J302
DC IN 3V

【FLEXIBLE BOARD】
HP901
PB HEAD

S312
RADIO/TAPE
TAPE → RADIO
(RADIO OFF)

S310
POWER

RV301
VOL

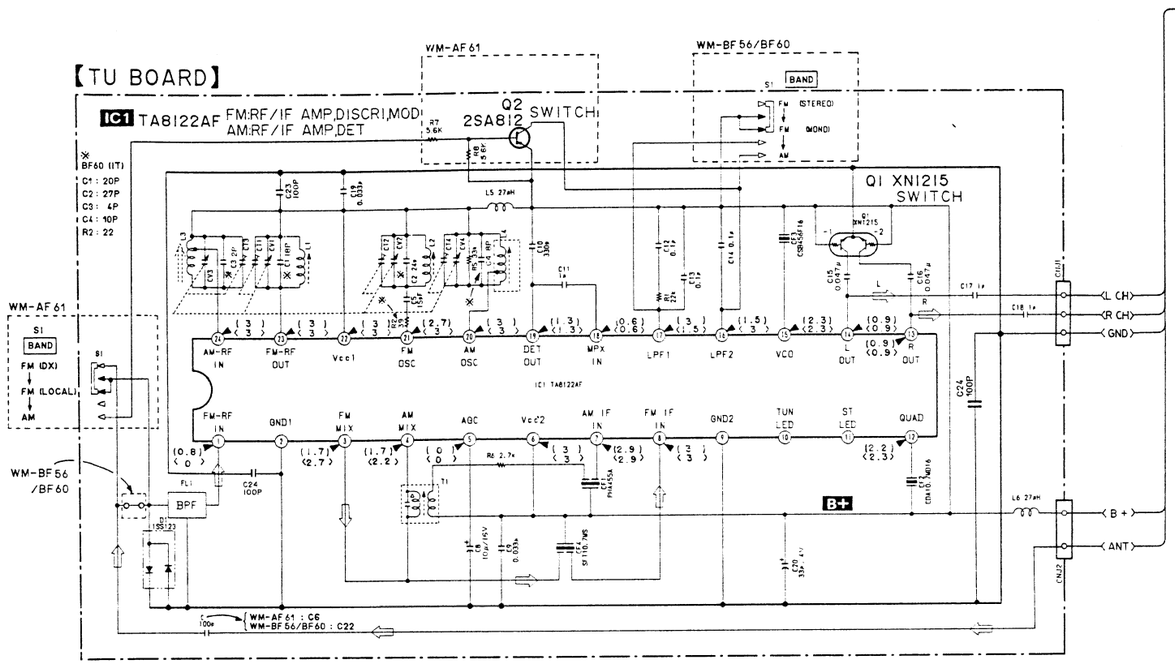
J301
PHONES

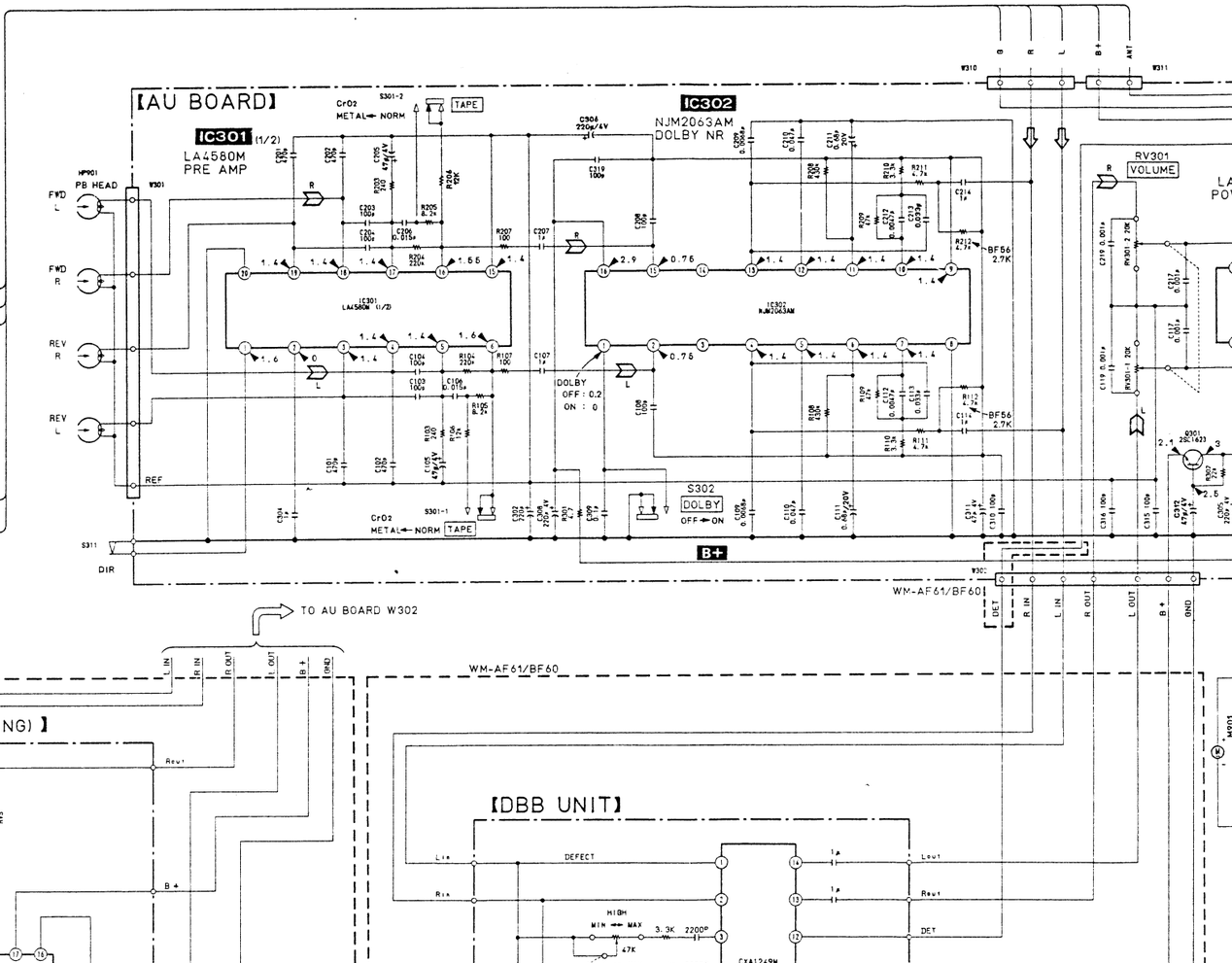
S301
TAPE
NORMAL
METAL

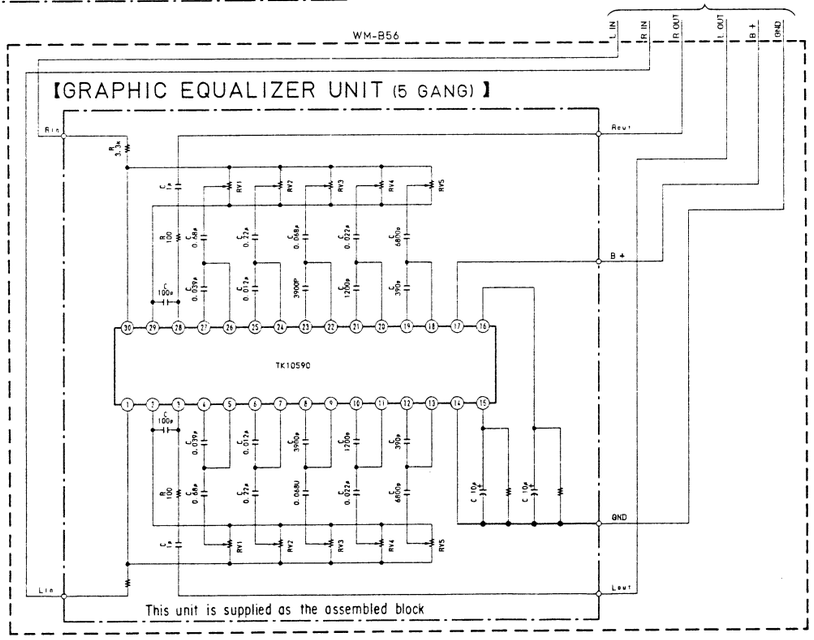
S302
DOLBY NR
OFF
ON

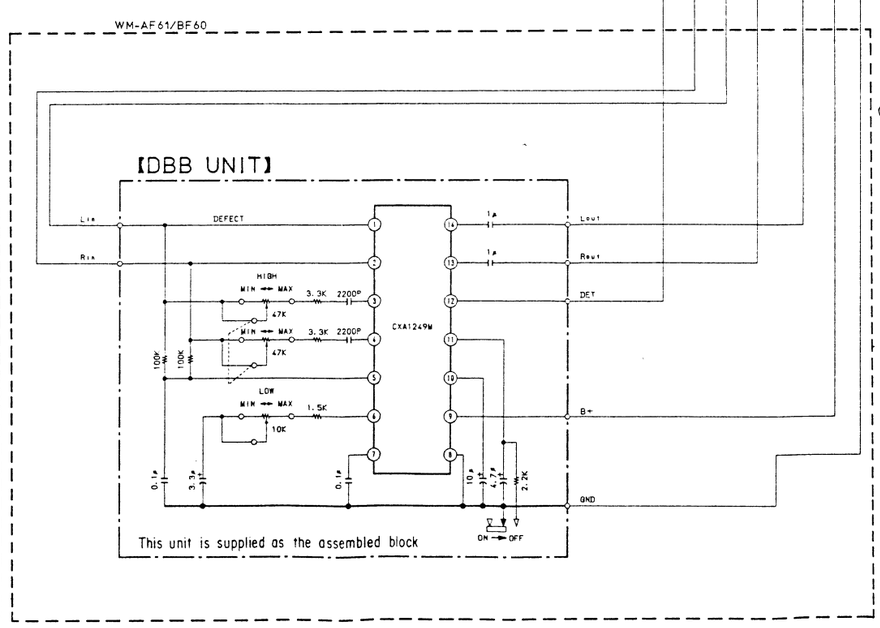
WM-AF61/BF60

5-3. SCHEMATIC DIAGRAM





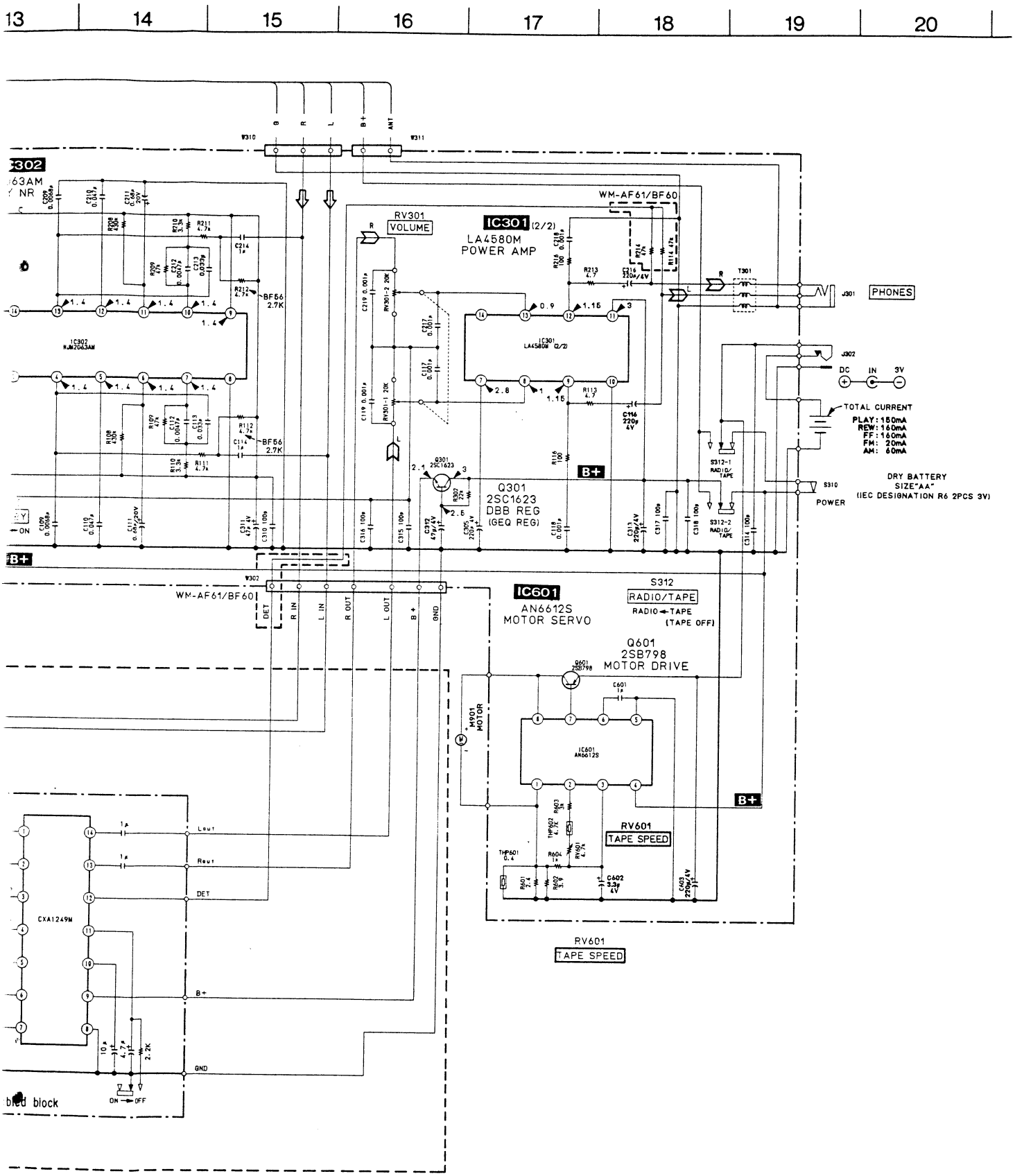




Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/8W or less unless otherwise specified.
- △ : internal component.
- ▭ : adjustment for repair.
- Total current measured with no cassette installed.
- Power voltage is dc 3 V and fed with regurated dc power supply from external power voltage jack.
- Voltage and waveforms are dc with respect to ground in playback mode.
  no mark: TAPE PB
  ( ) : FM
  < > : AM
- Voltages are taken with a VOM (50 kΩ/V).
  Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ⇨ : FM
  ⇨ : PB
- Switches:

Ref. No.	Switch	Position
S1	BAND	AF61 FM (DX) BF56/BF60 FM(STEREO)
S301	TAPE	NORMAL
S302	DOLBY	OFF
S310	POWER	OFF
S312	TAPE/RADIO	TAPE

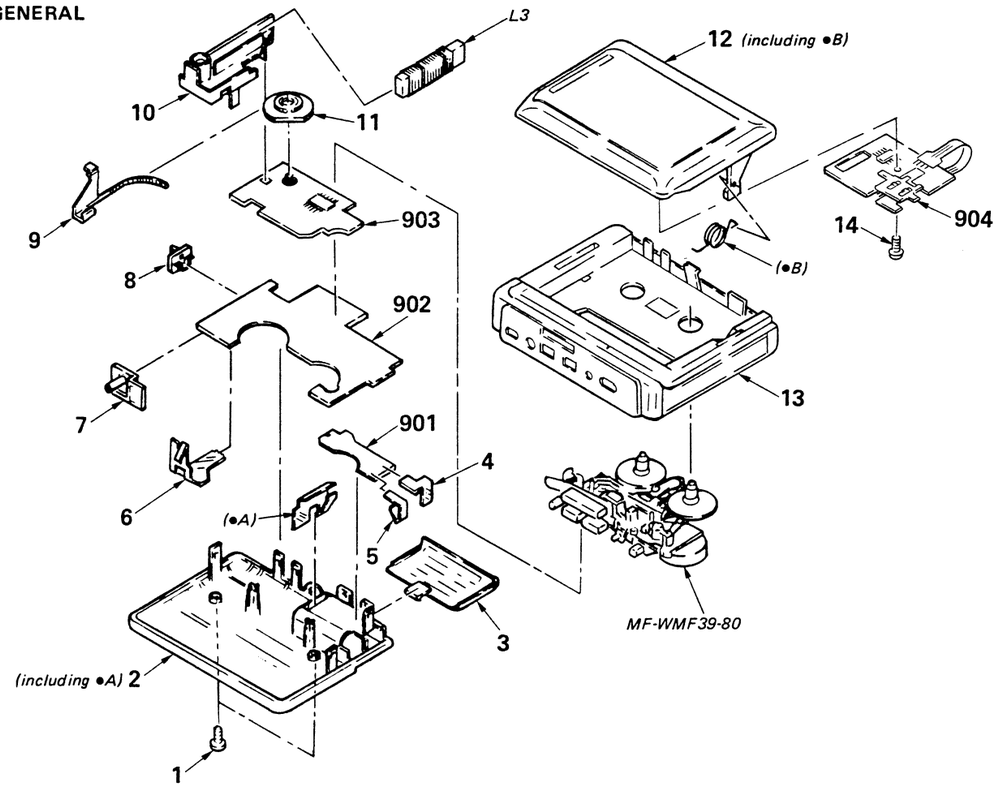

13
14
15
16
17
18
19
20
W310
B
R
L
B+
ANT
W311
WM-AF61/BF60
RV301
VOLUME
IC301 (2/2)
LA4580M
POWER AMP
PHONES
J301
J302
DC IN 3V
TOTAL CURRENT
PLAY: 150mA
REW: 160mA
FF: 160mA
FM: 20mA
AM: 60mA
DRY BATTERY
SIZE "AA"
(IEC DESIGNATION R6 2PCS 3V)
S310
POWER
S312-1
RADIO/TAPE
S312-2
RADIO/TAPE
Q301
2SC1623
DBB REG
(GEQ REG)
B+
W302
WM-AF61/BF60
DET
R IN
L IN
R OUT
L OUT
B+
GND
IC601
AN6612S
MOTOR SERVO
S312
RADIO/TAPE
RADIO ← TAPE
(TAPE OFF)
Q601
2SB798
MOTOR DRIVE
M901
MOTOR
IC601
AN6612S
RV601
TAPE SPEED
RV601
TAPE SPEED
CXA1249M
Lout
Rout
DET
B+
GND
ON → OFF

SECTION 6
EXPLODED VIEWS

NOTE:

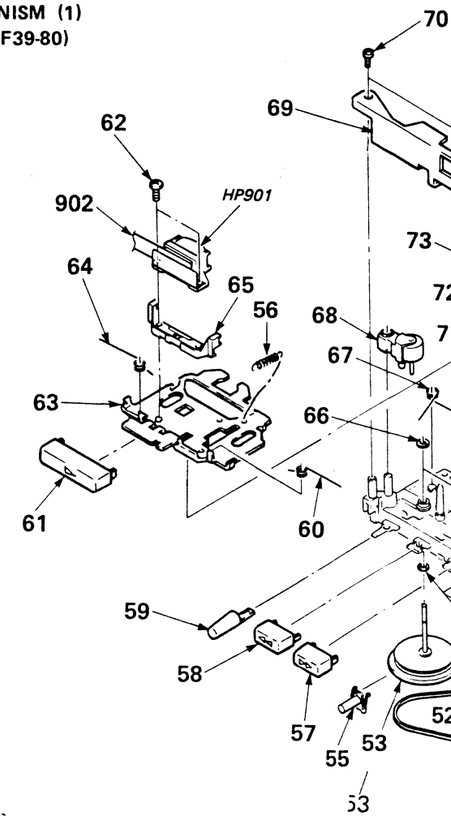
- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- Color Indication of Appearance Parts
  Example:
  (RED) . . . KNOB, BALANCE (WHITE)
  ↑ ↑
  Cabinet's Color Parts Color

6-1. GENERAL



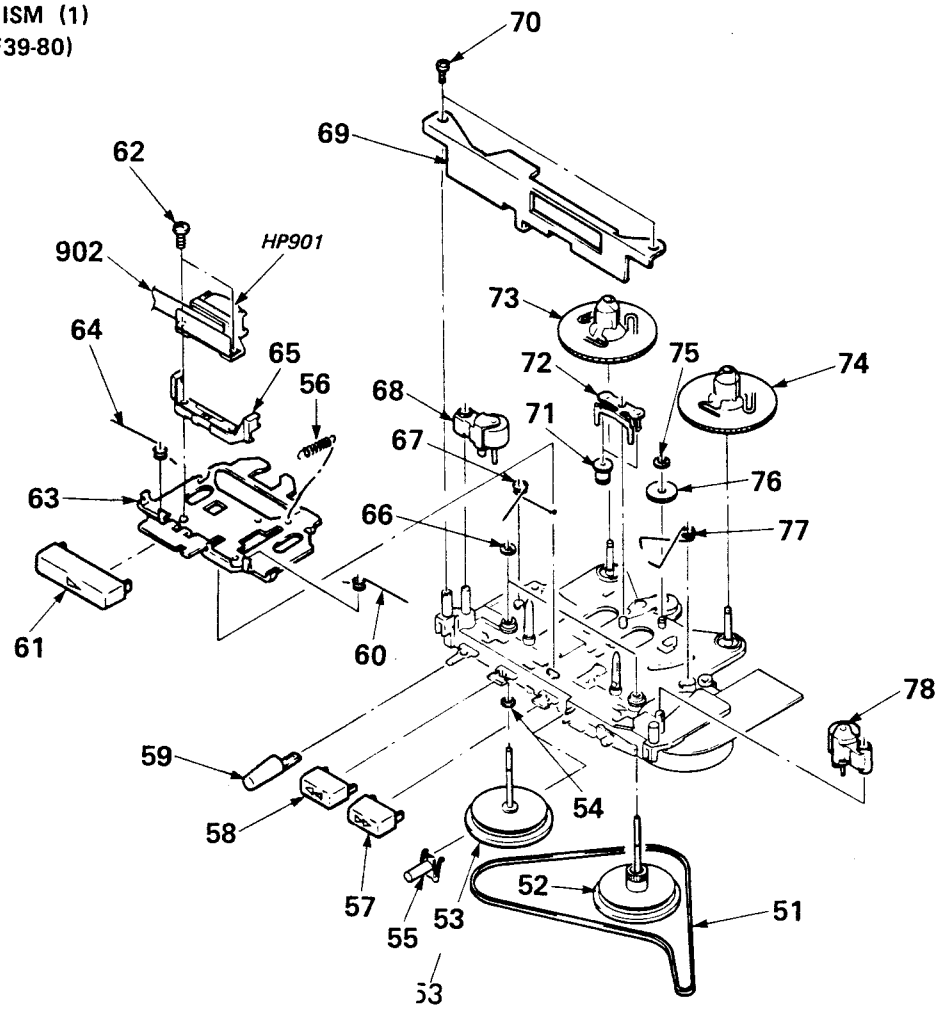
No.	Part No.	Description	Remarks
1	7-685-105-19	TAPPING +P 2X8 NON-SLIT	
2	X-3346-518-1	CABINET (REAR) (CF) (B) ASSY	
3	3-346-585-01	LID (B), BATTERY CASE	
4	3-346-589-01	TERMINAL (PLUS), BATTERY	
5	3-346-590-01	TERMINAL (MINUS), BATTERY	
6	*3-346-714-01	PLATE (HD), SHIELD	
7	3-346-596-01	KNOB (FUNC)	
8	3-346-592-01	KNOB (SW)	
9	3-346-702-01	POINTER	
10	*3-346-701-01	HOLDER, ANTENNA	
11	3-346-599-01	KNOB (TUN)	
12	X-3346-532-1	(BF60)...HOLDER (CF)(K) ASSY, CASSETTE	
	X-3346-533-1	(BF56)...HOLDER (CF)(H) ASSY, CASSETTE	
	X-3346-534-1	(AF61)...HOLDER (CF)(I) ASSY, CASSETTE	
13	X-3346-515-1	(BF56).....CABINET (FRONT)(CF)(E) ASSY	
	X-3346-516-1	(AF61).....CABINET (FRONT)(CF)(B) ASSY	
	X-3346-517-1	(BF60:AEP,UK)	
		...CABINET (FRONT)(CF)(G) ASSY	
	X-3346-535-1	(BF60:IT)...CABINET (FRONT)(CF)(D) ASSY	
14	3-318-382-61	SCREW (1.7X2.5), TAPPING	
901	1-626-543-11	PC BOARD, BATTERY TERMINAL	
902	A-3270-507-A	(BF60/AF61)...MOUNTED PCB, AU	
	A-3270-508-A	(BF56).....MOUNTED PCB, AU	
903	A-3216-478-A	(BF56/BF60:AEP,UK)...PC BOARD ASSY, TU	
	A-3216-481-A	(AF61).....PC BOARD ASSY, TU	
	A-3216-549-A	(BF60:IT).....PC BOARD ASSY, TU	
904	1-464-956-11	(BF60/AF61)...DBB UNIT	

6-2. MECHANISM (1) (MF-WMF39-80)



No.	Part No.	Description	Remarks
51	3-341-267-01	BELT, CAPSTAN	
52	X-3335-635-1	FLYWHEEL (T) ASSY	
53	X-3335-636-1	FLYWHEEL ASSY	
54	3-701-437-11	WASHER (242T), TEFLON	
55	3-341-294-01	BUTTON (DIR)	
56	3-341-271-01	SPRING, TENSION	
57	3-346-587-01	BUTTON (F)	
58	3-346-588-01	BUTTON (R)	
59	3-341-961-01	BUTTON (STOP)	
60	3-341-276-11	SPRING (N)	
61	3-346-586-01	BUTTON (P)	
62	3-704-252-21	SCREW (M 1.4 X 3.8)	
63	3-341-711-01	LEVER, PLAY	
64	3-341-277-11	SPRING (R)	
65	3-341-702-01	GUIDE, TAPE	

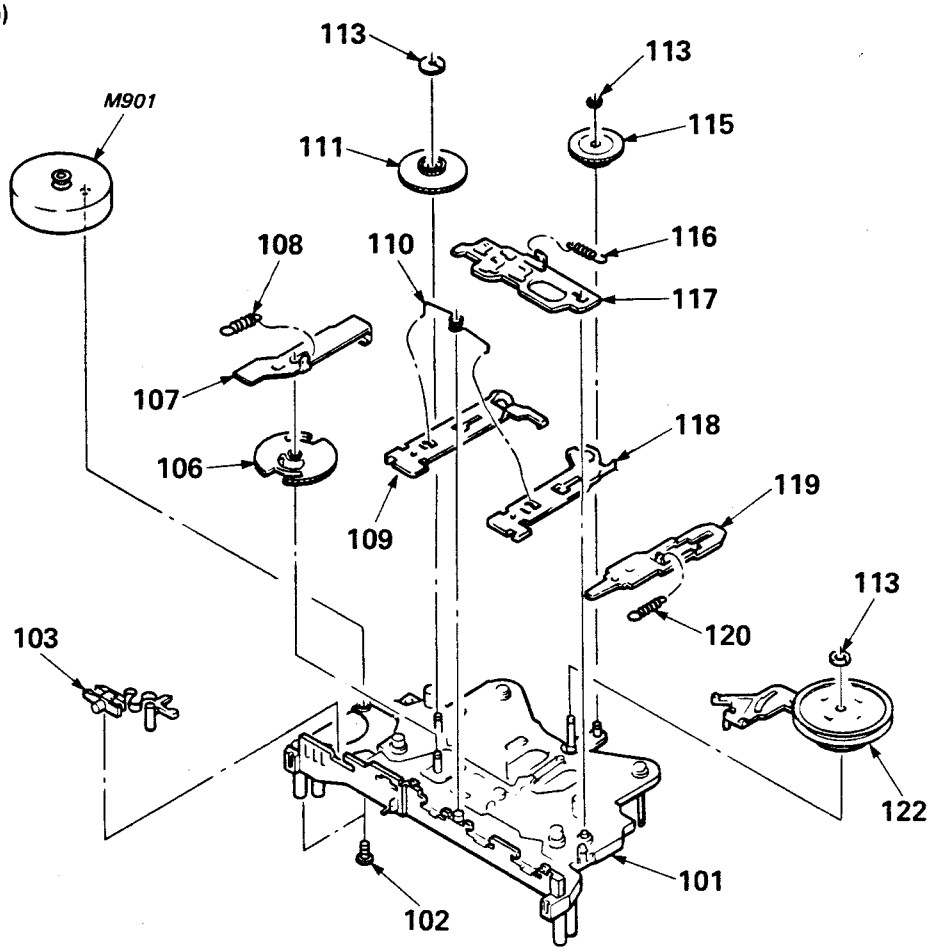
6-2. MECHANISM (1) (MF-WMF39-80)



No.	Part No.	Description	Remarks
51	3-341-267-01	BELT, CAPSTAN	
52	X-3335-635-1	FLYWHEEL (T) ASSY	
53	X-3335-636-1	FLYWHEEL ASSY	
54	3-701-437-11	WASHER (242T), TEFLON	
55	3-341-294-01	BUTTON (DIR)	
56	3-341-271-01	SPRING, TENSION	
57	3-346-587-01	BUTTON (F)	
58	3-346-588-01	BUTTON (R)	
59	3-341-961-01	BUTTON (STOP)	
60	3-341-276-11	SPRING (N)	
61	3-346-586-01	BUTTON (P)	
62	3-704-252-21	SCREW (M 1.4 X 3.8)	
63	3-341-711-01	LEVER, PLAY	
64	3-341-277-11	SPRING (R)	
65	3-341-702-01	GUIDE, TAPE	

No.	Part No.	Description	Remarks
66	3-321-483-11	RING, RETAINING	
67	3-341-270-01	SPRING (R)	
68	X-3335-624-1	PINCH LEVER (R) ASSY	
69	3-341-762-01	HOLDER, S	
70	3-893-942-21	SCREW (1.7 X 5), TAPPING (B)	
71	3-341-275-01	GEAR, FR	
72	3-341-701-01	LEVER, FR	
73	3-341-291-01	GEAR, S REEL	
74	3-341-290-01	GEAR, T REEL	
75	3-341-752-01	WASHER, POLYETHYLENE (t=0.13)	
	3-341-752-11	WASHER, POLYETHYLENE (t=0.25)	
76	3-341-265-01	GEAR, R	
77	3-341-763-01	SPRING	
78	X-3335-623-1	PINCH LEVER (N) ASSY	
HP901	1-543-524-11	HEAD, MAGNETIC (PLAY BACK)	
902	1-623-643-11	PC BOARD, HEAD FLEXIBLE	

6-3. MECHANISM (2)
(MF-WMF39-80)



No.	Part No.	Description	Remarks
101	A-3163-146-A	CHASSIS ASSY	
102	3-335-797-31	SCREW (M 1.4 X 3), TOOTHED LOCK	
103	3-341-293-01	LEVER, MODE	
106	3-341-292-01	GEAR, CAM	
107	3-341-299-01	LEVER, DIR	
108	3-341-274-01	SPRING (POWER TENSION), TENSION	
109	3-341-295-01	LEVER, FF	
110	3-341-268-01	SPRING	
111	3-341-289-01	GEAR, DECELERATION	

No.	Part No.	Description	Remarks
113	3-341-753-01	WASHER, POLYETHYLENE (t=0.13)	
	3-341-753-11	WASHER, POLYETHYLENE (t=0.25)	
115	3-341-266-01	GEAR, T	
116	3-341-272-01	SPRING, TENSION	
117	3-341-298-01	PLATE, LOCK	
118	3-341-296-01	LEVER, REW	
119	3-341-297-01	LEVER, STOP	
120	3-341-273-01	SPRING, TENSION	
122	A-3239-894-A	WHEEL ASSY, MIDWAY	
M901	A-3133-336-A	MOTOR BLOCK, ASSY	

SECTION 7
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "★" are not stocked since they are seldom required for routine sekvice. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF: μF, PF: μμF.

RESISTORS
- All resistors are in ohms.
- F: nonflammable

COILS
- MMH: mH, UH: μH

SEMICONDUCTORS
In each case, U: μ, for example:
UA...: μA..., UPA...: μPA...,
UPC...: μPC, UPD...: μPD...

Ref.No.	Part No.	Description
901	1-626-543-11	PC BOARD, BATTERY TERMINAL
902	A-3270-507-A	(BF60/AF61)...MOUNTED PCB, AU
	A-3270-508-A	(BF56).....MOUNTED PCB, AU
903	A-3216-478-A	(BF56/BF60:AEP,UK)...PC BOARD ASSY, TU
	A-3216-481-A	(AF61).....PC BOARD ASSY, TU
	A-3216-549-A	(BF60:IT).....PC BOARD ASSY, TU
904	1-464-956-11	(BF60/AF61)...DBB UNIT
C1	1-163-099-00	(BF56/AF61/BF60:AEP,UK) ...CERAMIC CHIP 18PF 5% 50V
C1	1-163-100-00	(BF60:IT)...CERAMIC CHIP 20PF 5% 50V
C2	1-163-102-00	(BF56/AF61/BF60:AEP,UK) ...CERAMIC CHIP 24PF 5% 50V
C2	1-163-237-00	(BF60:IT)...CERAMIC CHIP 27PF 5% 50V
C3	1-163-085-00	(BF56/AF61/BF60:AEP,UK) ...CERAMIC CHIP 2PF 0.25PF 50V
C3	1-163-087-00	(BF60:IT)...CERAMIC CHIP 4PF 0.25PF 50V
C4	1-163-091-00	(BF56/AF61/BF60:AEP,UK) ...CERAMIC CHIP 8PF 0.25PF 50V
C4	1-163-353-00	(BF60:IT)...CERAMIC CHIP 10PF 5% 50V
C5	1-163-097-00	CERAMIC CHIP 15PF 5% 50V
C8	1-124-462-00	ELECT 10MF 20% 16V
C9	1-163-078-11	CERAMIC CHIP 0.033MF 10% 25V
C10	1-163-129-00	CERAMIC CHIP 330PF 10% 50V
C11	1-162-638-11	CERAMIC CHIP 1MF 16V
C12	1-163-038-00	CERAMIC CHIP 0.1MF 25V
C13	1-163-038-00	CERAMIC CHIP 0.1MF 25V
C14	1-163-038-00	CERAMIC CHIP 0.1MF 25V
C15	1-163-809-11	CERAMIC CHIP 0.047MF 10% 25V
C16	1-163-809-11	CERAMIC CHIP 0.047MF 10% 25V
C17	1-162-638-11	CERAMIC CHIP 1MF 16V
C18	1-162-638-11	CERAMIC CHIP 1MF 16V
C19	1-163-078-11	CERAMIC CHIP 0.033MF 10% 25V
C20	1-124-431-00	ELECT 33MF 20% 4V
C22	1-163-117-00	(BF56/BF60) ...CERAMIC CHIP 100PF 5% 50V
C22	1-163-117-00	(AF61)...CERAMIC CHIP 100PF 5% 50V
C23	1-163-117-00	CERAMIC CHIP 100PF 5% 50V
C24	1-163-117-00	CERAMIC CHIP 100PF 5% 50V
C101	1-163-133-00	CERAMIC CHIP 470PF 10% 50V
C102	1-163-133-00	CERAMIC CHIP 470PF 10% 50V
C103	1-163-117-00	CERAMIC CHIP 100PF 5% 50V
C104	1-163-117-00	CERAMIC CHIP 100PF 5% 50V
C105	1-126-208-11	CAP,ELECT 47MF 20% 4V
C106	1-163-023-00	CERAMIC CHIP 0.015MF 5% 50V
C107	1-162-638-11	CERAMIC CHIP 1MF 16V
C108	1-163-117-00	CERAMIC CHIP 100PF 5% 50V
C109	1-163-019-00	CERAMIC CHIP 0.0068MF 10% 50V
C110	1-163-809-11	CERAMIC CHIP 0.047MF 10% 25V
C111	1-135-087-21	TANTAL. CHIP 0.68MF 10% 20V
C112	1-163-017-00	CERAMIC CHIP 0.0047MF 5% 50V
C113	1-163-989-11	CERAMIC CHIP 0.033MF 5% 25V
C114	1-162-638-11	CERAMIC CHIP 1MF 16V
C116	1-126-246-11	CAP,ELECT 220MF 20% 4V
C117	1-163-141-00	CERAMIC CHIP 0.001MF 10% 50V
C118	1-163-141-00	CERAMIC CHIP 0.001MF 10% 50V
C119	1-163-141-00	CERAMIC CHIP 0.001MF 10% 50V
C201	1-163-133-00	CERAMIC CHIP 470PF 10% 50V
C202	1-163-133-00	CERAMIC CHIP 470PF 10% 50V
C203	1-163-117-00	CERAMIC CHIP 100PF 5% 50V
C204	1-163-117-00	CERAMIC CHIP 100PF 5% 50V
C205	1-126-208-11	CAP,ELECT 47MF 20% 4V
C206	1-163-023-00	CERAMIC CHIP 0.015MF 5% 50V
C207	1-162-638-11	CERAMIC CHIP 1MF 16V
C208	1-163-117-00	CERAMIC CHIP 100PF 5% 50V
C209	1-163-019-00	CERAMIC CHIP 0.0068MF 10% 50V
C210	1-163-809-11	CERAMIC CHIP 0.047MF 10% 25V
C211	1-135-087-21	TANTAL. CHIP 0.68MF 10% 20V
C212	1-163-017-00	CERAMIC CHIP 0.0047MF 5% 50V
C213	1-163-989-11	CERAMIC CHIP 0.033MF 5% 25V
C214	1-162-638-11	CERAMIC CHIP 1MF 16V
C216	1-126-246-11	CAP,ELECT 220MF 20% 4V
C217	1-163-141-00	CERAMIC CHIP 0.001MF 10% 50V
C218	1-163-141-00	CERAMIC CHIP 0.001MF 10% 50V
C219	1-163-141-00	CERAMIC CHIP 0.001MF 10% 50V
C302	1-126-246-11	CAP,ELECT 220MF 20% 4V
C304	1-162-638-11	CERAMIC CHIP 1MF 16V
C305	1-126-246-11	CAP,ELECT 220MF 20% 4V
C306	1-126-246-11	CAP,ELECT 220MF 20% 4V
C308	1-126-246-11	CAP,ELECT 220MF 20% 4V
C309	1-163-038-00	CERAMIC CHIP 0.1MF 25V
C310	1-163-117-00	CERAMIC CHIP 100PF 5% 50V
C311	1-126-208-11	CAP,ELECT 47MF 20% 4V
C312	1-126-208-11	CAP,ELECT 47MF 20% 4V
C313	1-126-246-11	CAP,ELECT 220MF 20% 4V
C314	1-163-117-00	CERAMIC CHIP 100PF 5% 50V
C315	1-163-117-00	CERAMIC CHIP 100PF 5% 50V
C316	1-163-117-00	CERAMIC CHIP 100PF 5% 50V
C317	1-163-117-00	CERAMIC CHIP 100PF 5% 50V
C318	1-163-117-00	CERAMIC CHIP 100PF 5% 50V
C319	1-163-117-00	CERAMIC CHIP 100PF 5% 50V
C601	1-162-638-11	CERAMIC CHIP 1MF 16V

Ref.No.	Part No.	Description
C602	1-126-196-11	CAP,ELECT 3.3MF 20% 50V
C603	1-126-246-11	CAP,ELECT 220MF 20% 4V
CF1	1-567-090-00	FILTER, CERAMIC
CF2	1-577-090-61	FILTER, CERAMIC
CF3	1-577-091-11	OSCILLATOR, CRYSTAL
CF4	1-577-090-61	FILTER, CERAMIC
CNJ1	*1-565-368-11	PIN, CONNECTOR 3P
CNJ2	*1-565-368-11	PIN, CONNECTOR 3P
CV1	1-151-605-11	CAP, VAR, POLYETHYLENE
D1	8-719-101-23	DIODE 1SS123
FL1	1-236-169-11	FILTER, BAND PASS
IC1	8-759-230-39	IC TA8122AF
IC301	8-759-820-66	IC LA4580M
IC302	8-759-701-07	IC NJM2063AM
IC601	8-759-400-12	IC AN6612S
J301	1-566-800-11	JACK (PHONES)
J302	1-565-371-21	JACK, OUTER POWER
JR1	1-216-296-00	METAL GLAZE 0 5% 1/8W
JR2	1-216-296-00	METAL GLAZE 0 5% 1/8W
JR3	1-216-296-00	METAL GLAZE 0 5% 1/8W
JR4	1-216-295-00	METAL GLAZE 0 5% 1/10W
JR5	1-216-296-00	METAL GLAZE 0 5% 1/8W
JR6	1-216-296-00	METAL GLAZE 0 5% 1/8W
JR7	1-216-296-00	METAL GLAZE 0 5% 1/8W
JR8	1-216-295-00	METAL GLAZE 0 5% 1/10W
JR9	1-216-296-00	METAL GLAZE 0 5% 1/8W
JR10	1-216-296-00	METAL GLAZE 0 5% 1/8W
JR11	1-216-296-00	METAL GLAZE 0 5% 1/8W
L1	1-459-848-11	COIL (WITH CORE) (RF)(FM)
L2	1-459-847-11	(BF56/AF61/BF60:AEP,UK) ...COIL (WITH CORE) (OSC)(FM)
L2	1-459-859-11	(BF60:IT)...COIL (WITH CORE) (OSC)(FM)
L3	1-402-369-11	ANTENNA, FERRITE-ROD MW
L4	1-406-285-11	COIL (OSC)(AM)
L5	1-410-209-51	INDUCTOR CHIP 27UH
L6	1-410-209-51	INDUCTOR CHIP 27UH
Q1	8-729-403-17	TRANSISTOR XN1215-TW
Q2	8-729-100-76	(AF61)...TRANSISTOR 2SA812
Q301	8-729-100-66	TRANSISTOR 2SC1623
Q601	8-729-903-47	TRANSISTOR 2SB1132Q
R1	1-216-081-00	METAL GLAZE 22K 5% 1/10W
R2	1-216-015-00	(BF56/AF61/BF60:AEP,UK) METAL GLAZE 39 5% 1/10W
R2	1-216-009-00	(BF60:IT)...METAL GLAZE 22 5% 1/10W
R5	1-216-093-00	METAL GLAZE 68K 5% 1/10W
R6	1-216-208-00	METAL GLAZE 2.7K 5% 1/8W
R7	1-216-067-00	(AF61)...METAL GLAZE 5.6K 5% 1/10W
R8	1-216-091-00	(AF61)...METAL GLAZE 56K 5% 1/10W
R103	1-216-034-00	METAL GLAZE 240 5% 1/10W
R104	1-216-105-00	METAL GLAZE 220K 5% 1/10W
R105	1-216-071-00	METAL GLAZE 8.2K 5% 1/10W
R106	1-216-075-00	METAL GLAZE 12K 5% 1/10W
R107	1-216-025-00	METAL GLAZE 100 5% 1/10W
R108	1-216-112-00	METAL GLAZE 430K 5% 1/10W
R109	1-216-089-00	METAL GLAZE 47K 5% 1/10W
R110	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W
R111	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W
R112	1-216-065-00	(BF60/AF61) ...METAL GLAZE 4.7K 5% 1/10W
R112	1-126-208-00	(BF56)...METAL GLAZE 2.7K 5% 1/8W
R113	1-216-308-00	METAL GLAZE 4.7 5% 1/10W
R114	1-216-238-00	METAL GLAZE 47K 5% 1/8W
R116	1-216-025-00	METAL GLAZE 100 5% 1/10W
R203	1-216-034-00	METAL GLAZE 240 5% 1/10W
R204	1-216-105-00	METAL GLAZE 220K 5% 1/10W
R205	1-216-071-00	METAL GLAZE 8.2K 5% 1/10W
R206	1-216-075-00	METAL GLAZE 12K 5% 1/10W
R207	1-216-025-00	METAL GLAZE 100 5% 1/10W
R208	1-216-112-00	METAL GLAZE 430K 5% 1/10W
R209	1-216-089-00	METAL GLAZE 47K 5% 1/10W
R210	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W
R211	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W
R212	1-216-065-00	(BF60/AF61)...METAL GLAZE 4.7K 5% 1/10W
R212	1-216-208-00	(BF56).....METAL GLAZE 2.7K 5% 1/8W
R213	1-216-308-00	METAL GLAZE 4.7 5% 1/10W
R214	1-216-238-00	METAL GLAZE 47K 5% 1/8W
R216	1-216-025-00	METAL GLAZE 100 5% 1/10W
R301	1-216-308-00	METAL GLAZE 4.7 5% 1/10W
R302	1-216-081-00	METAL GLAZE 22K 5% 1/10W
R601	1-216-135-00	METAL GLAZE 2.4 5% 1/8W
R602	1-216-140-00	METAL GLAZE 3.9 5% 1/8W
R603	1-216-060-00	METAL GLAZE 3K 5% 1/10W
R604	1-216-049-00	METAL GLAZE 1K 5% 1/10W
RV301	1-238-161-11	RES, VAR 20K/20K (VOLUME)
RV601	1-238-181-11	RES, ADJ, CERMET 4.7K

Ref.No.	Part No.	Description
S1	1-570-386-31	SWITCH, SLIDE (BAND)
S301	1-571-277-11	SWITCH, SLIDE (TAPE)
S302	1-571-275-11	SWITCH, SLIDE (DOLBY)
S310	1-571-518-11	SWITCH, LEAF (POWER)
S311	1-571-519-11	SWITCH, LEAF (DIR)
S312	1-571-277-11	SWITCH, SLIDE
T1	1-404-793-12	TRANSFORMER, IF
T301	1-409-445-11	COIL, TRAP
THP601	1-808-389-11	THERMISTOR, POSITIVE
THP602	1-808-388-11	THERMISTOR, POSITIVE
TP1	*1-535-657-11	TERMINAL
TP2	*1-535-657-11	TERMINAL
W301	*1-565-370-11	HOUSING, CONNECTOR 5P
W302	*1-565-380-11	HOUSING, CONNECTOR 7P
W310	*1-565-369-11	SOCKET, CONNECTOR 3P
W311	*1-565-369-11	SOCKET, CONNECTOR 3P

ACCESSORY & PACKING MATERIAL

1-528-238-21	(AF61)...BATTERY CHARGER
1-528-239-12	(AF61)...BATTERY, STORAGE, LEAD (BP-700)
3-346-518-01	CLIP, BELT
*3-346-565-01	(BF56/BF60)...CUSHION (UPPER)
*3-346-570-01	(AF61).....CUSHION (REAR)
*3-346-574-01	(BF56/BF60)...CUSHION (LOWER)
*3-346-793-01	(AF61).....CUSHION (UPPER)
*3-346-788-01	(BF56)...INDIVIDUAL CARTON
*3-346-790-01	(BF60)...INDIVIDUAL CARTON
*3-346-795-01	(AF61)...INDIVIDUAL CARTON
3-786-016-11	(BF56/AF61:Canadian)...MANUAL, INSTRUCTION
3-786-016-21	(AF61:US).....MANUAL, INSTRUCTION
3-786-016-41	(BF60).....MANUAL, INSTRUCTION
8-952-236-90	(BF56)....HEADPHONE MDR-E212/J (B) SET
8-952-260-91	(BF60/AF61)...HEADPHONE MDR-W10L/B SET

9-953-300-11

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Audio Group

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